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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/815,905

03/31/2004

Wen-Jian Lin

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9293

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01/23/2009

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EXAMINER

TRAN, HOANG Q

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

01/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/815,905	Applicant(s) LIN ET AL.	
	Examiner HOANG TRAN	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 1-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/23/2008 and 6/13/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

AMENDMENT

Receipt of applicant amendment submitted 8/29/2008 is acknowledged. Currently Claims 1-28 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20-21, 23 and 26-28 rejected under 35 U.S.C. 103 (a) as being unpatentable by the US Patent to Miles (5,835,255) in view of the NPL document to Matsumoto et al “Novel prevent method of stiction using silicon anodization for SOI”.

In terms of claim 20, 21, and 23 Applicant admitted prior art discloses an interferometer modulation pixel comprising a first electrode (Fig. 28: '1004'), a movable second electrode '1004' (See Claim 1) being situated above the first electrode and being parallel to the first electrode (Figure 28: 1006); two supports (1006) between the first electrode and the second electrode to form a cavity (1004) between the first and second electrodes (1004) wherein insulator layer is present (140);

Applicant Admitted Prior art does not teach an hydrophobic layer.

Matsumoto teaches a hydrophobic (pg. 154 Col 2) are being used on a cavity-side surface of the first of a substrate in this instant the hydrophobic layer will be use on

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a surface area (page 153 and 154). Applicant describes the reason to apply such a layer is due to excess of water in the disclosure [0012]. The problem describe is known in the art as "stiction" wherein water may collect due manufacturing techniques.

Matsumoto describes the reason why "stiction" is present (page 153 last paragraph) and a method to prevent "stiction" through the application of a SAM or fluorocarbon film which displays hydrophobic properties (page 154 Col 1). **A motivation** for such an application is to prevent water from interacting with the electrode and (arm 291 and 292) in order to produce fix mechanic movement in the interferometer arms.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Matsumoto with hydrophobic polymers and electrodes to make mechanical moving arm in an interferometer.

As to claim 26-28, the first electrode comprises a transparent conductive layer (142), a light-absorption layer (80), and an insulating layer (140), and wherein the movable second electrode is a light-reflection electrode (506 and 502) having a hydrophobic layer prevents the first electrode from adsorbing water molecules (See Claim 20 rejection).

Claims 22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miles in view of Matsumoto as applied to claim 20 above, and further in view of Peterson (6,335,224)

Regarding claim 22, 24-25, Pei discloses the invention of claim 20, however, Pei does not explicitly disclose the molecular compound of the hydrophobic organic

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compound comprises silanes including hexamethyl disilane. Peterson discloses in the Abstract that the microelectronic device is protected by a water adsorption resistant coating that can be chosen from a list of compounds including hexamethyl disilane for the compound exhibit the desired property of resistant to water adsorption.

Furthermore, Peterson discloses the insulating layer comprises silicon nitride and the hydrophobic layer is positioned on the insulating layer (Fig. 2B '26'). It would have been obvious to one having ordinary skill in the art to recognize the teaching of Peterson would be applicable to the art of Pei in modifying Pei's prior art. The motivation for using the compounds as claimed is obvious to one having ordinary skill in the art for it's property of resisting water adsorption and is clearly taught in Peterson's prior art that such material is used to collectively package and protect the microelectronic devices.

Response to Arguments

Applicant's arguments, see remarks section, filed 01/25/2008 with respect to the rejection(s) of claim(s) 20 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the non-final rejection dated 5/30/2008 has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made wherein the prior art to Miles which was provided by the applicant in view of the IDS submitted document of Matsumoto “**Novel prevent method of stiction using silicon anodization for SOI**” which was also provided by the applicant. The combination of the two prior arts above reads onto claimed limitation as rejected above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOANG TRAN whose telephone number is (571)272-5049. The examiner can normally be reached on 9:00AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on 571-272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hoang Tran/
Examiner, Art Unit 2874

/Sung H. Pak/
Primary Examiner, Art Unit 2874